EPA Region 5 Records Ctr.
229827

# SITE ASSESSMENT REPORT
# FOR
# NORTH CHICAGO SITE
# NORTH CHICAGO, LAKE COUNTY, ILLINOIS

TDD: T05-9410-105
PAN: EIL0850SBA

February 24, 1995

Prepared For:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Emergency and Enforcement Response Branch
77 West Jackson Boulevard
Chicago, Illinois 60604

Prepared By: _____ Date: 2/24/95
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Thomas Kouris, TAT Leader

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International Specialists in the Environment

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# 1. INTRODUCTION

On September 16, 1994, the United States Environmental Protection Agency (U.S. EPA) tasked the Ecology & Environment, Inc., (E & E) Technical Assistance Team (TAT) to conduct a site assessment at the North Chicago site in North Chicago, Lake County, Illinois. The site assessment, soil sampling, and photodocumentation were performed under Technical Direction Document (TDD) T05-9410-105. The activities performed under the TDD were conducted to evaluate the threat to public health and the environment posed by the potential for imminent and substantial release of hazardous substances located at the site.

# 2. SITE BACKGROUND

## 2.1 SITE DESCRIPTION

The North Chicago site is a 1.6-acre vacant lot located north of Martin Luther King Jr. Drive and east of Commonwealth Avenue in a partially vegetated area (latitude 42°19'43"N, longitude 87°51'43"W) (Figure 2-1). Industrial complexes are located to the east and west of the site, a neighborhood park is located northwest of the site, and several residences are located north of the site and the Elgin, Joliet, and Eastern Railroad embankment (Figure 2-2). Fansteel, Inc., (Fansteel) and North Chicago Refiners and Smelters are located east of the site. EMCO Chemical Distributors (EMCO) is located west of the site. The Fansteel and EMCO facilities are presently used only as office space. A vacant parking area is located south of the site. A small stream, Pettibone Creek, begins approximately 1 mile north of the site and flows north to south across the length of the site. The suspected contaminants at the site included polychlorinated biphenyls (PCBs), metals, and volatile organic compounds (VOCs).

The site topography is flat with a slight slope, in a westerly direction towards Pettibone Creek. Access to the site is not restricted, people walk throughout the lot and visit the Creek. At the northwest end of the site are large diameter concrete pipes where the homeless lodge for protection against inclement weather.

## 2.2 SITE HISTORY

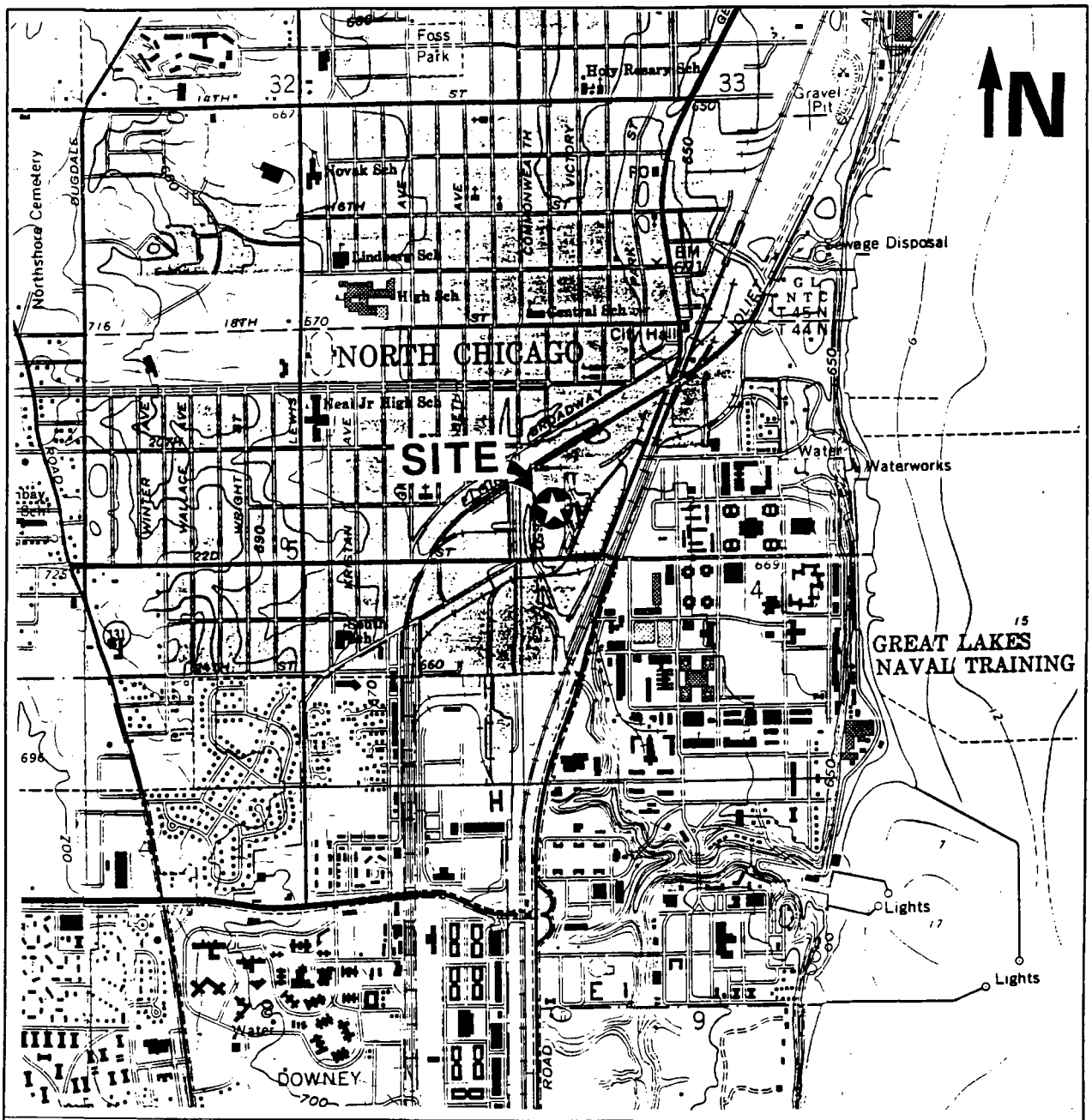
According to the Illinois Environmental Protection Agency (IEPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Integrated Site Assessment, the North Chicago site, Fansteel, and North Chicago Refiners and Smelters were owned by Vulcan-Louisville Smelting Company from 1921 through 1936. In 1936, the North Chicago site was transferred to C.N.S. & M Railroad Company. Reports to IEPA by local residents and authorities indicate that the site may once have been used for disposal of industrial waste by local industries.

Sometime between 1936 and 1954, the North Chicago site was purchased by an individual who developed the area as a parking lot. This is the only development known to have occurred at the site. The owner of the site is reported to have solicited for fill material to be brought to the site and deposited. The IEPA report indicated the lot was used to store tailing materials from the Vulcan-Louisville Smelting Company operations. Local residents have reported to IEPA that Chicago Hardware Foundry had disposed of slag at the site.

The title to the property is currently held by Northern Trust Bank of Lake Forest, Illinois. The bank holds the property in trust for [redacted] The bank has hired consultants to perform environmental assessments at the site.

In June 1988, a fire at the site prompted a response by IEPA. The North Chicago Fire Department reported that fill materials at the site had spontaneously heated and ignited nearby brush on the site. The fire extended along a ravine approximately 200 feet long and east of Pettibone Creek (Figure 2-3). Fill materials were located in the ravine. On June 15, 1988, IEPA conducted a visual inspection and identified potential sampling points. Three soil samples were collected during the site visit. The sample results indicated elevated concentrations of lead, cadmium, and barium in the soil.

In April 1993, IEPA conducted a visual inspection and identified health and safety concerns associated with the site. Later that month, IEPA and the Northern Trust Bank environmental consultant, Mostardi-Platt Associates, performed sampling at and around the site. IEPA collected six sediment samples; four samples were collected from Pettibone Creek, one from a Creek tributary, and one from the inner harbor of Lake Michigan. Five residential soil samples and one background soil sample were collected offsite. In addition, four groundwater samples were collected from monitoring wells on site. Analytical results indicated the presence of VOCs, semivolatile organic compounds, pesticides, PCBs, and inorganic compounds.




## Quadrangle Location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*Technical Assistance Team*
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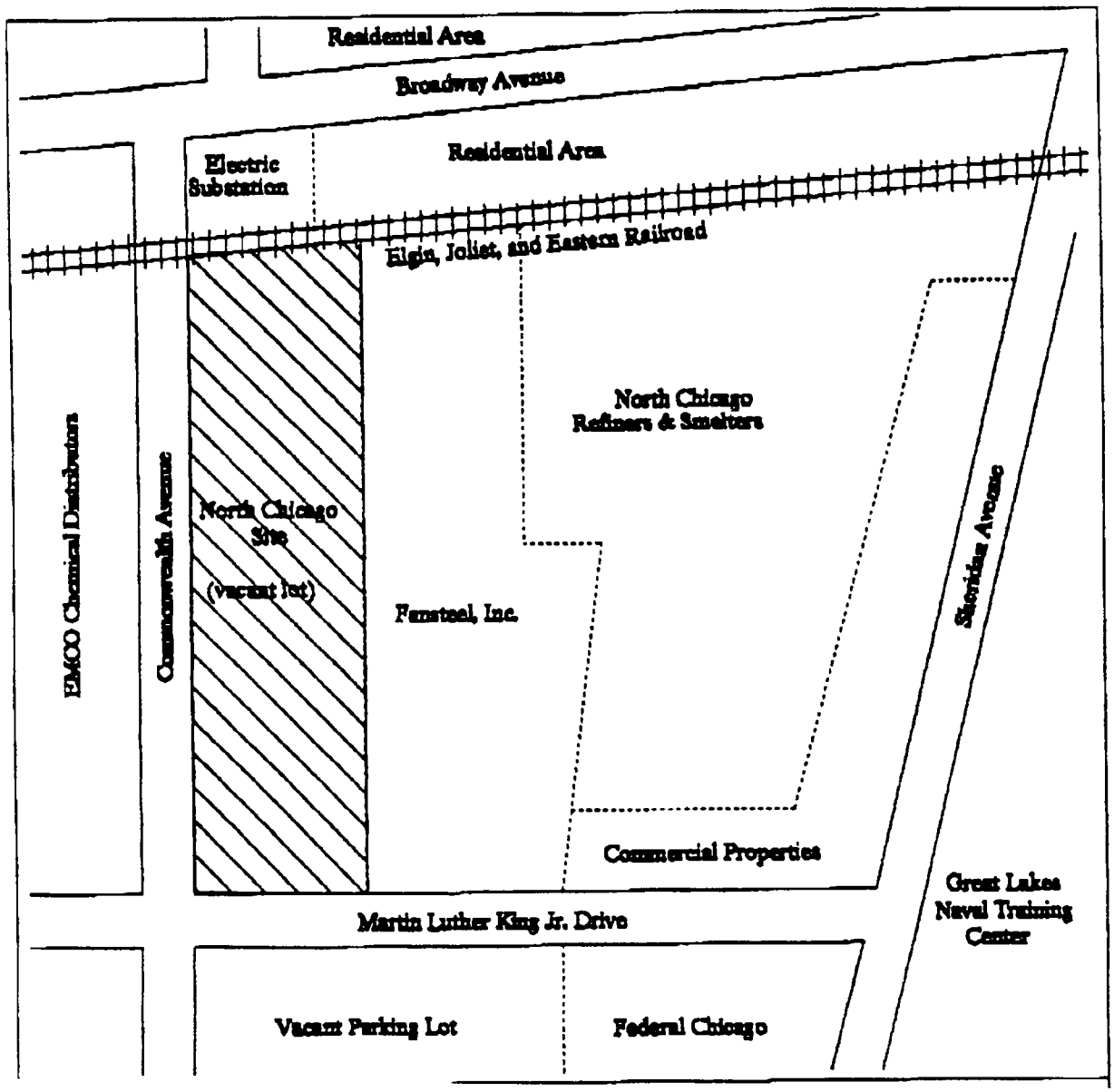
111 W. Jackson Blvd., Chicago, Illinois 60604

| | | |
|---|---|---|
| TITLE | Site Location Map | FIGURE # 2-1 |
| SITE | North Chicago Site | SCALE 1:24,000 |
| CITY / STATE | North Chicago / Illinois | PAN EIL0850SAA |
| SOURCE | USGS Map, 7.5 Minute Series Waukegan, IL Quadrangle | DATE 1972, 1980 |
| | | REVISED 10/3/94 |




N

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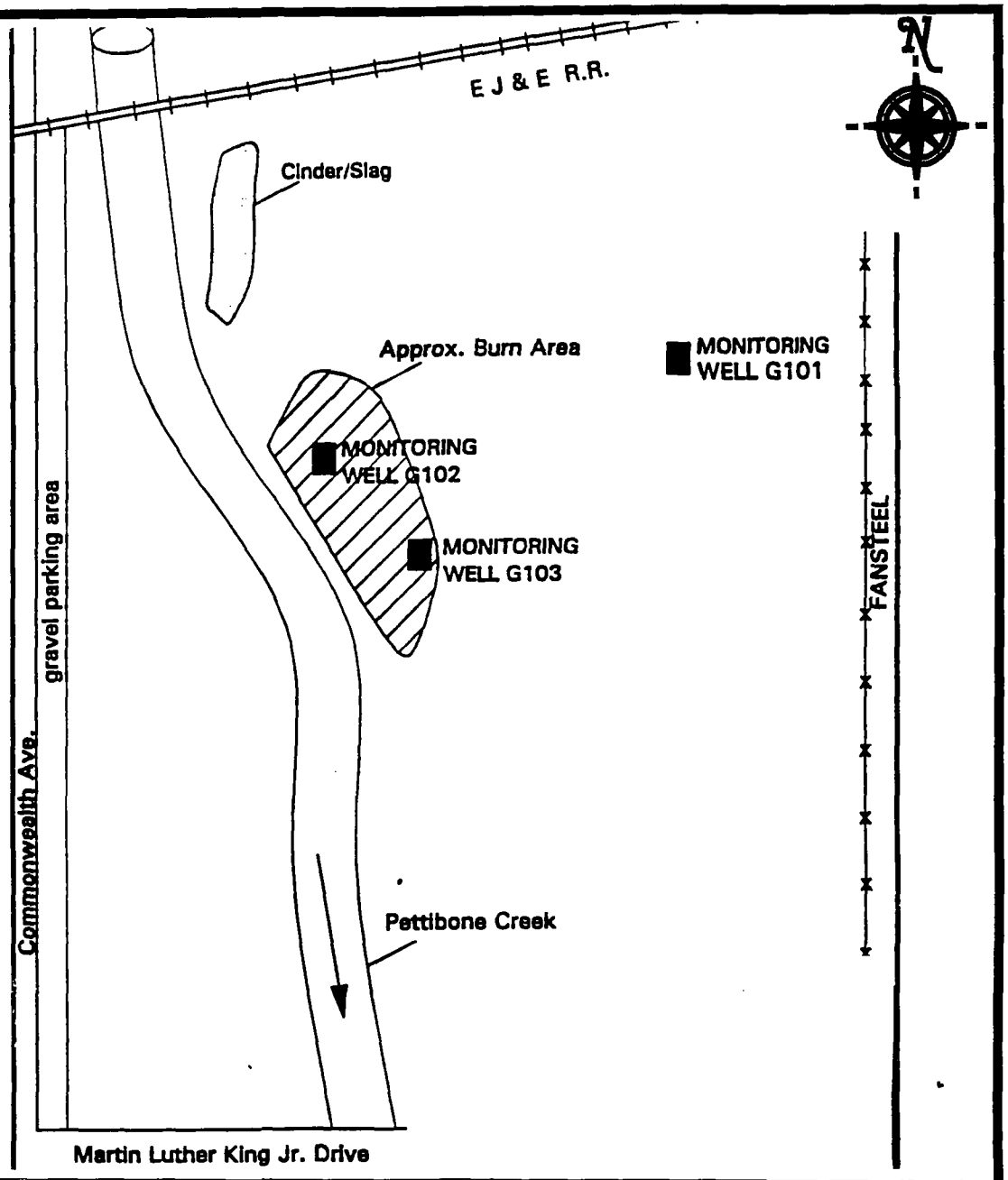
| | | |
|---|---|---|
| TITLE | Site Location Map - Detailed | FIGURE # 2-2 |
| SITE | North Chicago Site | SCALE Not to Scale |
| CITY | North Chicago STATE Illinois | PAN EIL0850SAA |
| SOURCE | Ecology and Environment, Inc. | DATE 10/3/94 REVISED 6/1/95 |




LEGEND

- monitoring well
- burn area
- cinder/slag

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| | | |
|---|---|---|
| TITLE: Site Features Map | | FIGURE #: 2-3 |
| SITE: North Chicago Site | | SCALE: Not to Scale |
| CITY: North Chicago | STATE: Illinois | PAN: EIL0850SAA |
| SOURCE: Ecology and Environment, Inc. | | DATE: 10/3/94<br>REVISED: 6/1/95 |

# 3. SITE ASSESSMENT

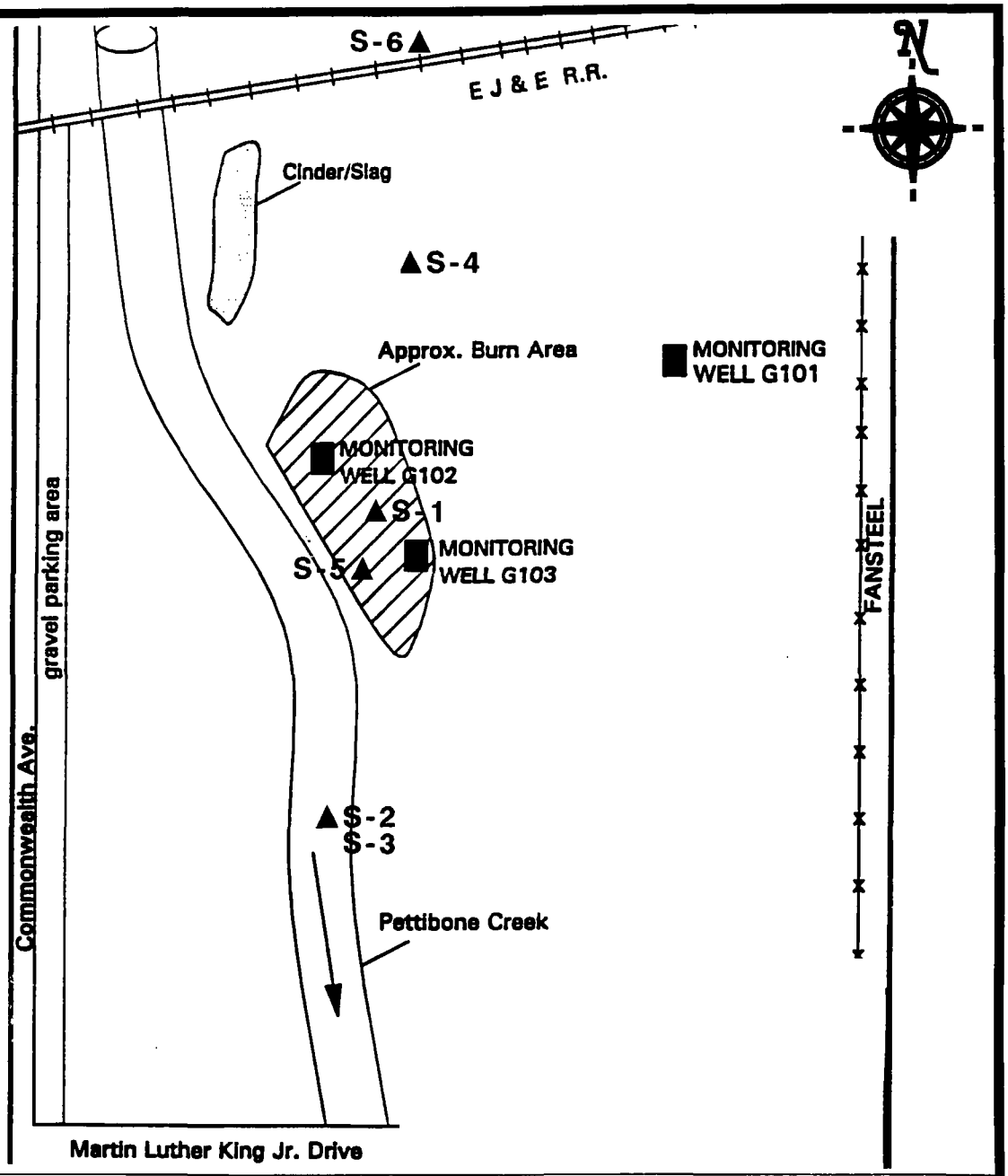
On September 26, 1994, TAT members (TATMs) Brad Stimple, Tim Calloway, and Yvette Anderson met U.S. EPA On-Scene Coordinator (OSC) Cindy Nolan at the North Chicago site to collect soil and sediment samples from the site and Pettibone Creek. OSC Nolan and TATM Anderson performed a site reconnaissance to determine where to collect samples. Once the sample points had been selected, TAT began digging with a power auger in the fill area.

TAT collected soil sample S-1, a brown-colored soil, at a depth of approximately 9 feet below the site surface in the burn area (Figure 3-1). Sample S-1 was analyzed for PCBs, total Target Analyte List (TAL) metals, and VOCs.

TAT then used a hand auger to collect sediment samples south of the burn area in Pettibone Creek. Samples S-2 and S-3 were identified as brown and black creek sediments. The samples were collected from points adjacent to one another at a depth of 6 to 8 inches below the sediment surface. Sample S-2 was analyzed for PCBs and TAL metals. Sample S-3 was analyzed for VOCs.

Sample S-4 was black soil collected at a depth of 1 to 4 inches below the site surface and northeast of the burn area. The sample was analyzed for PCBs and TAL metals. Sample S-5 was a multi-colored soil stained rust, blue, white, black, and brown. The sample was collected in the burn area, from a soil pile near the southern slope of the creek area. Sample S-5 was analyzed for TAL metals.

After completion of site sampling, TAT inspected the site area and drove to the apartment complex located at 927-941 Broadway Avenue, north of the site. Background soil sample S-6, a reddish-brown soil, was collected from a vegetated area across the alley from the apartment complex and below the north slope of the Elgin, Joliet, and Eastern Railroad. Slag material was observed beneath the reddish-brown soil. Sample S-6 was analyzed for TAL metals and PCBs.




LEGEND

- sample location
- monitoring well
- burn area
- cinder/slag

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| | | |
|---|---|---|
| TITLE | Sample Location Map | FIGURE # 3-1 |
| SITE | North Chicago Site | SCALE Not to Scale |
| CITY | North Chicago STATE Illinois | PAN EIL0850SAA |
| SOURCE | Ecology and Environment, Inc. | DATE 10/3/94 REVISED 6/1/95 |

# 4. ANALYTICAL RESULTS

The six samples collected from the North Chicago site were collected in accordance with the site sampling plan and the Office of Solid Waste and Emergency Response (OSWER) Directive. The samples were numbered S-1, S-2, S-3, S-4, S-5, and S-6. The samples were delivered to National Environmental Testing Laboratories (NET) Midwest of Bartlett, Illinois, for analysis under TDD T05-9409-807.

A summary of positive results for these samples are listed in Table 4-1. Soil sample S-1 contained elevated concentrations of Aroclor 1254, lead, and VOCs. Aroclor 1254, lead, and the VOCs listed in Table 4-1, are identified as hazardous substances under CERCLA. Sediment sample S-2 contained elevated concentrations of Aroclor 1254 and lead, and sediment sample S-3 contained elevated concentrations of cis-1,2-dichloroethene and trichloroethene. Soil samples S-4, S-5, and S-6 contained elevated concentrations of lead. The analytical package is contained in Appendix A.

**Table 4-1**

**ANALYTICAL RESULTS**
**NORTH CHICAGO SITE**

September 26, 1994

(units = mg/kg)

| Parameter | Sample Identification | | | | | |
|---|---|---|---|---|---|---|
| | S-1 | S-2 | S-3 | S-4 | S-5 | S-6 |
| Aroclor 1254 | 17,400 | 870 | NA | ND | NA | ND |
| Lead | 30,300 | 539 | NA | 6,020 | 6,210 | 495 |
| Cis-1,2-dichloroethene | 5.100 | NA | 0.189 | NA | NA | NA |
| Methylene chloride | 2.400 | NA | ND | NA | NA | NA |
| Tetrachloroethene | 0.930 | NA | ND | NA | NA | NA |
| Trichloroethene | 45.000 | NA | 0.015 | NA | NA | NA |

Key:
NA = Parameter not analyzed.
ND = Parameter not detected.

Source: NET Midwest, Bartlett, Illinois (Analytical TDD T05-9409-807).

# 5. DISCUSSION OF POTENTIAL THREATS

The site assessment at the North Chicago site was conducted to evaluate the threat to public health and the environment posed by the potential for imminent and substantial release of hazardous substances from the site.

The National Contingency Plan (NCP) provides specific criteria for evaluation of a threat and the appropriateness of a removal action in Title 40 Code of Federal Regulations (CFR) Section 300.415, paragraph (b) (2), subsections (i) through (viii). Observations documented during this site assessment apply to subsections i, ii, iv, v, and vi:

(i) **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.** The site is unsecured and access to the site by human and animal populations was evident. Pettibone Creek sediment samples S-2 and S-3 contained elevated concentrations of the hazardous substances Aroclor 1254, lead, and the VOCs listed in Table 4-1. Elevated concentrations of lead were found in soils near the site surface in samples S-4 and S-5. Humans or animals that come in contact with the contaminated sediments and soils, would be exposed to these hazardous substances.

(ii) **Actual or potential contamination of drinking water supplies or sensitive ecosystems.** Aroclor 1254, lead, and the VOCs listed in Table 4-1 are hazardous substances that were found at the site surface within nine feet below the site surface. Site groundwater supplies may be contaminated. Pettibone Creek sediments have been found to contain these hazardous substances. While local drinking water is supplied

by the city's public water supply, animals may ingest these hazardous substances by drinking the waters in Pettibone Creek.

(iv) **High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.** Aroclor 1254, lead, and the VOCs listed in Table 4-1 are hazardous substances that were found in soils at or near the site surface. Access to the site is unrestricted. The contamination may be carried by humans, animals, and machinery that travel across the site and track the hazardous substances offsite. Contaminated soils may also become airborne and carried offsite. Both of these mechanisms may allow for hazardous substances at or near the site surface to migrate.

(v) **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.** Precipitation passing through site soils may carry the hazardous substances found at the site through the site soils and into the groundwater table and Pettibone Creek. Both of these water supplies could allow these hazardous substances to migrate offsite.

(vi) **Threat of fire or explosion.** The local fire department has already reported that fill materials found at the site have spontaneously heated and caused brush fires. Nothing has been done at the site to reduce the risk of reoccurrence of this event.

## 6. SUMMARY

In summary, problems at the North Chicago site include:

- Potential exposure to nearby human populations and animals from the hazardous substances found at the site;
- Actual and potential contamination of water supplies found on the site by the hazardous substances;
- High levels of hazardous substances in soils at or near the surface, that may migrate by physical means and weather conditions; and
- The threat of fire.

Observations documented during the site assessment indicate that the conditions at the North Chicago site constitute a threat to public health and the environment posed by the imminent and substantial release of hazardous substances found at the site. This conclusion is based upon observations by the OSC and TAT, as well as investigative reports from IEPA as evaluated against the criteria set forth in the NCP.

# APPENDIX A

## SITE PHOTOGRAPHS

# FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago 

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 0925

DIRECTION OF PHOTOGRAPH: West

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable): S-1

DESCRIPTION: Sample S-1 was a sandy-brown color and a fruity odor was observed. The sample was collected at a depth of 9 ft.

DATE: 9-26-94

TIME: 0920

DIRECTION OF PHOTOGRAPH: West

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):

DESCRIPTION: Location where sample S-1 was collected at the site.

# FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago 

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 0935

DIRECTION OF PHOTOGRAPH: North

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable): S-3


DESCRIPTION: Sample S-3 was collected from the creek area

DATE: 9-26-94

TIME: 0955

DIRECTION OF PHOTOGRAPH: Northwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable): S-4


DESCRIPTION: Composite sample S-4 was collected near a light post located on the site. The sample was a black soil collected at a depth of 3 ft.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 3 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 0955

DIRECTION OF PHOTOGRAPH: Northwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: Sample S-4 was collect from the area near the light post. The sample was a black soil.

DATE: 9-26-94

TIME: 0955

DIRECTION OF PHOTOGRAPH: Northwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: Sample S-4 was collected from the area near the light post.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 4 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 1000

DIRECTION OF PHOTOGRAPH: Southwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable): S-5


DESCRIPTION: Surface sample S-5 was collected near the edge of the creek. The sample was a mixture of colors; brown, black, white, blue, and rust.

DATE: 9-26-94

TIME: 1000

DIRECTION OF PHOTOGRAPH: Southwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: Sample S-5 was collected from the soil patch near the slope of the creek.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 5 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 1000

DIRECTION OF PHOTOGRAPH: Southwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable): S-5


DESCRIPTION: Surface sample S-5 was collected near the edge of the creek. The sample was a mixture of colors; brown black, white, blue, and rust.

DATE: 9-26-94

TIME: 1040

DIRECTION OF PHOTOGRAPH: East

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable): S-6

DESCRIPTION: Sample S-6 was collected from the grassy area located behind residences at 927 through 947 Broadway Avenue.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 6 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 1020

DIRECTION OF PHOTOGRAPH: Southeast

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: The vacant site was heavily vegetated and the Fansteel factory was located at the site.

DATE: 9-26-94

TIME: 1020

DIRECTION OF PHOTOGRAPH: Southeast

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: The site was heavily vegetated and several monitoring wells were located on the site; one is seen in the photograph.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 7 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 1040

DIRECTION OF PHOTOGRAPH: Southeast

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: Heavily vegetated area behind residences located at 927 through 947 Broadway Avenue where sample S-6 was collected.

DATE: 9-26-94

TIME: 0825

DIRECTION OF PHOTOGRAPH: Northeast

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: Homeless area located near the creek in the vicinity of the site; near the concrete tunnel.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 8 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 0825

DIRECTION OF PHOTOGRAPH: Northwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: A cylindrical drain was located in the creek area.

DATE: 9-26-94

TIME: 0900

DIRECTION OF PHOTOGRAPH: West

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: Empty drums were found near a monitoring well at the site.

# FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 9 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 0825

DIRECTION OF PHOTOGRAPH: Northeast

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: The vacant Fansteel factory located near the site.

DATE: 9-26-94

TIME: 0910

DIRECTION OF PHOTOGRAPH: Northwest

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: A black soil patch located near a railroad track slope

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: North Chicago PAGE 10 OF 10

U.S.EPA ID: TDD: T05-9409-007 PAN: EIL0850SAA

DATE: 9-26-94

TIME: 0935

DIRECTION OF PHOTOGRAPH: North

WEATHER CONDITIONS: cool, cloudy 60°F

PHOTOGRAPHED BY: Yvette Anderson

SAMPLE ID (if applicable):


DESCRIPTION: Location where sample S-3 was collected from the creek area.

# APPENDIX B

# ANALYTICAL DATA PACKAGE

ecology and environment, inc.
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International Specialists in the Environment

# MEMORANDUM

DATE: October 24, 1994

TO: Yvette Anderson, TAT Project Manager, E & E, Chicago, Illinois

FROM: Emily S. Landis, TAT Geochemist, E & E, Cleveland, Ohio

THROUGH: Anne Busher, Assistant TATL, E & E, Cleveland, Ohio
David Hendren, TAT Analytical Services Manager, E & E, Chicago, Illinois
Mary Jane Ripp, TAT QA Reports Manager, E & E, Chicago, Illinois

SUBJECT: Volatile Organics Analysis Data Quality Assurance Review, North Chicago Site, North Chicago, Lake County, Illinois

REFERENCE: Project TDD T059410105 Analytical TDD T059409807
Project PAN EIL0850SBA Analytical PAN EIL0850AAA

The data quality assurance review of two soil samples, analyzed for volatile organic compounds is now complete. The samples were shipped to National Environmental Testing, Inc. (NET), on September 26, 1994. The laboratory analyzed the samples for volatile organic compounds by purge-and-trap gas chromatography/mass spectrometry (GC/MS), following the United States Environmentl Protection Agency (U.S. EPA) Solid Waste-846 (SW-846) Method 8240. The results were reported on a dry weight basis.

Data Qualifications:

I. Sample Holding Times: Acceptable

Both samples were collected at the North Chicago site on September 26, 1994, and received at NET/Bartlett on the following day. Volatile organics analyses (VOAs) were completed on September 30, 1994. The samples were handled within the holding time limit of 14 days from collection to analysis.

II. Instrument Performance: Acceptable

Bromofluorobenzene (BFB) instrument tuning compound was run within 12 hours of the samples, on the same instrument, as required. All ion abundance criteria were met.

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III. Initial and Continuing Calibrations: Acceptable

All target compound mean response factors (RFs) were greater than 0.05 for the initial and continuing calibrations, as required. All calibration check compounds (CCCs) had percent relative standard deviations (%RSDs) of less than or equal to 30%, as required. The percent differences (%Ds) in RFs between initial and continuing calibrations were less than or equal to 25%, as required for CCCs.

IV. Blanks: Acceptable

No contaminants were found in the blank.

V. Error Determination: Precision and bias not determined

A matrix spike (MS) and MS duplicate were prepared. Percent recoveries (%Rs) were within control limits.

VI. Compound Identification: Acceptable

The relative retention times (RRTs) of reported compounds are within 0.06 RRT units of the standard RRT for that compound. Ions present in the standard mass spectrum are also present in the sample spectra.

VII. Compound Quantitation: Acceptable

The reported values correctly reflect initial sample masses and extract dilutions required for analysis.

VIII. Performance Evaluation Samples: Not applicable

IX. Overall Assessment of Data:

This data evaluation is based upon guidelines established in the Office of Solid Waste and Emergency Response (OSWER) Directive 99360.4-01 (April 1990) and SW-846 "Test Methods for the Evaluation of Solid Waste" (1986, 3rd ed.). With the data submitted, the results are acceptable for use as reported.

NATIONAL ENVIRONMENTAL TESTING, INC.

Bartlett Division
850 W. Bartlett Rd.
Bartlett, IL 60103
Tel: (708) 289-3100
Fax: (708) 289-5445

# ANALYTICAL REPORT

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10/06/1994

Sample No. : 278375

NET Job No.: 94.07567

Sample Description: S-1; Grab
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:20
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|
| PCBs 8080 NonAqueous | | | | | | | |
| PCB-1016 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1221 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1232 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1242 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1248 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1254 | 17,400 | ug/kg | 10/05/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1260 | [illegible] | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1268 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| Surr: Tetrachloroxylene (TCX) | 95 | % | 10/04/1994 | 31-128 | seh | 198 122 | 8080 (1) |
| [illegible] | | | | | | | |
| VOLATILES - 8240 NONAQUEOUS | | | | | | | |
| Acrolein | <10,000 | ug/Kg | 09/30/1994 | 100 | llj | 543 | 8240 (1) |
| Acrylonitrile | <10,000 | ug/Kg | 09/30/1994 | 100 | llj | 543 | 8240 (1) |
| Benzene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Bromodichloromethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Bromoform | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Bromomethane | <1,000 | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| Carbon tetrachloride | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Chlorobenzene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Chloroethane | <1,000 | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| 2-Chloroethylvinyl ether | <1,000 | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| Chloroform | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Chloromethane | <1,000 | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| Dibromochloromethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,2-Dichlorobenzene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,3-Dichlorobenzene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,4-Dichlorobenzene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,1-Dichloroethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |

VOA analysis performed at 100x dilution.
D100 : Parameter analysis performed at a 100x dilution.



OCEAN GROUP

NATIONAL ENVIRONMENTAL TESTING, INC.

Bartlett Division
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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278375

NET Job No.: 94.07567

Sample Description: S-1; Grab
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:20
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,1-Dichloroethene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| trans-1,2-Dichloroethene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| cis-1,2-Dichloroethene | 5,100 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,2-Dichloropropane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| cis-1,3-Dichloropropene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| trans-1,3-Dichloropropene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Ethyl benzene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Methylene chloride | 2,400 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,1,2,2-Tetrachloroethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Tetrachloroethene | 930 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Toluene | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,1,1-Trichloroethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,1,2-Trichloroethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Trichloroethene | 45,000 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Trichlorofluoromethane | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Vinyl chloride | <1,000 | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| Xylenes, Total | <500 | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Surr: 1,2-Dichloroethane-d4 | 109 | % | 09/30/1994 | 70-121 | llj | 543 | 8240 (1) |
| Surr: Toluene-d8 | 99 | % | 09/30/1994 | 81-117 | llj | 543 | 8240 (1) |
| Surr: Bromofluorobenzene | 102 | % | 09/30/1994 | 74-121 | llj | 543 | 8240 (1) |

VOA analysis performed at 100x dilution.



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278377

NET Job No.: 94.07567

Sample Description: S-3; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:37
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|
| Solids, Total | 73.7 | % | 09/29/1994 | 0.1 | mpl | 108 | 2540 (4) |
| VOLATILES - 8240 NONAQUEOUS | | | | | | | |
| Acrolein | <100 | ug/Kg | 10/04/1994 | 100 | llj | 545 | 8240 (1) |
| Acrylonitrile | <100 | ug/Kg | 10/04/1994 | 100 | llj | 545 | 8240 (1) |
| Benzene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Bromodichloromethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Bromoform | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Bromomethane | <10 | ug/Kg | 10/04/1994 | 10 | llj | 545 | 8240 (1) |
| Carbon tetrachloride | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Chlorobenzene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Chloroethane | <10 | ug/Kg | 10/04/1994 | 10 | llj | 545 | 8240 (1) |
| 2-Chloroethylvinyl ether | <10 | ug/Kg | 10/04/1994 | 10 | llj | 545 | 8240 (1) |
| Chloroform | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Chloromethane | <10 | ug/Kg | 10/04/1994 | 10 | llj | 545 | 8240 (1) |
| Dibromochloromethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,2-Dichlorobenzene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,3-Dichlorobenzene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,4-Dichlorobenzene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,1-Dichloroethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,2-Dichloroethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,1-Dichloroethene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| trans-1,2-Dichloroethene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| cis-1,2-Dichloroethene | 189 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,2-Dichloropropane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| cis-1,3-Dichloropropene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| trans-1,3-Dichloropropene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Ethyl benzene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Methylene chloride | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,1,2,2-Tetrachloroethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278377

NET Job No.: 94.07567

Sample Description: S-3; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:37
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Toluene | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,1,1-Trichloroethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| 1,1,2-Trichloroethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Trichloroethene | 14.5 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Trichlorofluoromethane | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Vinyl chloride | <10 | ug/Kg | 10/04/1994 | 10 | llj | 545 | 8240 (1) |
| Xylenes, Total | <5.0 | ug/Kg | 10/04/1994 | 5.0 | llj | 545 | 8240 (1) |
| Surr: 1,2-Dichloroethane-d4 | 97 | % | 10/04/1994 | 70-121 | llj | 545 | 8240 (1) |
| Surr: Toluene-d8 | 106 | % | 10/04/1994 | 81-117 | llj | 545 | 8240 (1) |
| Surr: Bromofluorobenzene | 89 | % | 10/04/1994 | 74-121 | llj | 545 | 8240 (1) |



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# MEMORANDUM

DATE: October 21, 1994

TO: Yvette Anderson, TAT Project Manager, E & E, Chicago, Illinois

FROM: Emily S. Landis, TAT Geochemist, E & E, Cleveland, Ohio

THROUGH: Anne A. Busher, Assistant TATL, E & E, Cleveland, Ohio
Dave Hendren, TAT Analytical Services Manager, E & E, Chicago, Illinois
Mary Jane Ripp, TAT QA Reports Manager, E & E, Chicago, Illinois

SUBJECT: Polychlorinated Biphenyl (PCB) Data Quality Assurance Review, North Chicago Site, North Chicago, Lake County, Illinois

REFERENCE: Project TDD T059410105 Analytical TDD T059409807
Project PAN EIL0850SBA Analytical PAN EIL0850AAA

The data quality assurance (QA) review of one discrete and three composite soil samples, analyzed for PCBs is now complete. The samples were shipped to National Environmental Testing, Inc. (NET), on September 26, 1994. The laboratory analyzed the sample extracts by dual-column gas chromatography with an electron capture detector (GC/ECD). The results were reported on a dry weight basis.

Data Qualifications:

I. Sample Holding Times: Acceptable

All the samples were collected at the North Chicago site on September 26, 1994, and received at NET/Bartlett on September 27, 1994. The samples were extracted September 30, 1994, and analyses for PCBs were completed by October 5, 1994. The samples were handled in compliance with the holding time limits of 14 days from collection to extraction, and 40 days from extraction to analysis.

II. Instrument Performance: Acceptable

The 4,4-DDT retention time was greater than 12 minutes on both the quantitation and confirmation columns, as recommended, and peak separation for other pesticide compounds appears to be satisfactory. The percent breakdown for endrin and 4,4-DDT was less than 20% on both columns, as required. The retention time (RT) shift for the surrogate

recycled paper

decachlorobiphenyl (DCB) was less than 0.3% on both columns, as required.

III. Initial and Continuing Calibrations: Acceptable

The percent relative standard deviations (%RSD) of the response factors (RFs) for five PCB initial calibration standards (run on August 16, 1994) were less than 10% for Aroclors 1016, 1254, and 1248 on the quantitation column. The %RSDs for Aroclors 1242 and 1260, run on the confirmation column on September 27, 1994, were each 13%. For the daily calibration check on October 5, 1994, the percent differences (%Ds) between the initial and continuing calibrations for Aroclors 1254 and 1248 were within the 15%D limit for the quantitative column. The %Ds for Aroclors 1242 and 1260 were within the 20%D limit for the confirmation column.

IV. Blanks: Acceptable

No Aroclors were detected in the blanks.

V. Compound Identification: Acceptable

The identified Aroclors have patterns which match the standards' patterns. Positive results were confirmed by dual-column analysis.

VI. Compound Quantitation: Acceptable

The reported quantities accurately reflect dilutions and the samples' dry weight factors.

VII. Surrogate Recoveries: Acceptable

Percent recoveries for tetrachlorometaxylene and decachlorobiphenyl were within the stated QC limits.

VIII. Overall Assessment of Data: Acceptable

This data evaluation is based upon guidelines established in the Office of Solid Waste Emergency Response (OSWER) Directive 9360.4-01 (April 1990) and SW-846 "Test Methods for the Evaluation of Solid Waste" (1986, 3rd ed.). With the data submitted, the results are acceptable for use as reported.

NATIONAL ENVIRONMENTAL TESTING, INC.

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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278375

NET Job No.: 94.07567

Sample Description: S-1; Grab
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:20
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|---|
| PCBs 8080 NonAqueous | | | | | | | | |
| PCB-1016 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1221 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1232 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1242 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1248 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1254 | 17,400 | D100 | ug/kg | 10/05/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1260 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1268 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| Surr: Tetrachloroxylene (TCX) | 95 | | % | 10/04/1994 | 31-128 | seh | 198 122 | 8080 (1) |
| Surr: Decachlorobiphenyl (DCB) | 65 | | % | 10/04/1994 | 29-128 | seh | 198 122 | 8080 (1) |
| [redacted] | | | | | | | | |
| Acrolein | <10,000 | | ug/Kg | 09/30/1994 | 100 | llj | 543 | (1) |
| Acrylonitrile | <10,000 | | ug/Kg | 09/30/1994 | 100 | llj | 543 | 8240 (1) |
| Benzene | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Bromodichloromethane | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Bromoform | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Bromomethane | <1,000 | | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| Carbon tetrachloride | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Chlorobenzene | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Chloroethane | <1,000 | | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| 2-Chloroethylvinyl ether | <1,000 | | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| Chloroform | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| Chloromethane | <1,000 | | ug/Kg | 09/30/1994 | 10 | llj | 543 | 8240 (1) |
| Dibromochloromethane | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,2-Dichlorobenzene | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,3-Dichlorobenzene | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,4-Dichlorobenzene | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |
| 1,1-Dichloroethane | <500 | | ug/Kg | 09/30/1994 | 5.0 | llj | 543 | 8240 (1) |

VOA analysis performed at 100x dilution.
D100 : Parameter analysis performed at a 100x dilution.



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278376

NET Job No.: 94.07567

Sample Description: S-2; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:35
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|---|
| PCBs 8080 NonAqueous | | | | | | | | |
| PCB-1016 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1221 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1232 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1242 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1248 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1254 | 870 | D5 | ug/kg | 10/05/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1260 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1268 | <50 | | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| Surr: Tetrachloroxylene (TCX) | 116 | | % | 10/04/1994 | 31-128 | seh | 198 122 | 8080 (1) |
| Surr: Decachlorobiphenyl (DCB) | 49 | | % | 10/04/1994 | 29-128 | seh | 198 122 | 8080 (1) |

D5 : Parameter analysis performed at a 5x dilution.



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278378

NET Job No.: 94.07567

Sample Description: S-4; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:55
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|
| PCBs 8080 NonAqueous | | | | | | | |
| PCB-1016 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1221 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1232 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1242 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1248 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1254 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1260 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1268 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| Surr: Tetrachloroxylene (TCX) | 105 | % | 10/04/1994 | 31-128 | seh | 198 122 | 8080 (1) |
| Surr: Decachlorobiphenyl (DCB) | 82 | % | 10/04/1994 | 29-128 | seh | 198 122 | 8080 (1) |



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278380

NET Job No.: 94.07567

Sample Description: S-6; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 10:40
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|
| PCBs 8080 NonAqueous | | | | | | | |
| PCB-1016 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1221 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1232 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1242 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1248 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1254 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1260 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| PCB-1268 | <50 | ug/kg | 10/04/1994 | 50 | seh | 198 122 | 8080 (1) |
| Surr: Tetrachloroxylene (TCX) | 108 | % | 10/04/1994 | 31-128 | seh | 198 122 | 8080 (1) |
| Surr: Decachlorobiphenyl (DCB) | 66 | % | 10/04/1994 | 29-128 | seh | 198 122 | 8080 (1) |



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# MEMORANDUM

DATE: October 20, 1994

TO: Yvette Anderson, TAT Project Manager, E & E, Chicago, Illinois

FROM: Emily S. Landis, TAT Geochemist, E & E, Cleveland, Ohio

THROUGH: Anne A. Busher, Assistant TATL, E & E, Cleveland, Ohio
Dave Hendren, TAT Analytical Services Manager, E & E, Chicago, Illinois
Mary Jane Ripp, TAT QA Reports Manager, E & E, Chicago, Illinois

SUBJECT: Metals Data Quality Assurance Review, North Chicago Site, North Chicago, Lake County, Illinois

REFERENCE: Project TDD T059410105 Analytical TDD T059409807
Project PAN EIL0850SBA Analytical PAN EIL0850AAA

The data quality assurance review of the three composite and two discrete soil samples, analyzed for Target Analyte List metals is now complete. The samples were shipped to National Environmental Testing, Inc. (NET), on September 26, 1994. The laboratory analyzed the samples for metals by inductively coupled plasma (ICP, Method 6010) and atomic absorption (AA, 7000 Series Methods) spectroscopy. Analyses for arsenic and selenium were conducted at NET's laboratory in Cambridge, Massachusetts. The results were reported on a dry weight basis.

Data Qualifications:

I. Sample Holding Times: Acceptable

All the samples were collected at the North Chicago Site on September 26, 1994, and received at NET/Bartlett on the following day. The samples were digested September 29 and October 4, 1994. All the analyses were completed by October 4, 1994. All samples were handled in compliance with the holding time limit of six months for metals (28 days for mercury). As required by the United States Environmental Protection Agency (U.S. EPA) Solid Waste-846 (SW-846) Method 7471, mercury analyses were completed within 24 hours of digestion.

II. Initial and Continuing Calibrations: Acceptable

ICP - A blank and three standards were run prior to sample analysis. The percent recovery for the ICP standard was within the control limits of $\pm 10\%$ of the true value. Sample results

recycled paper

were within the calibration range.

AA - A blank and three standard concentrations were run prior to the sample analyses for each AA method, except mercury (arsenic, calcium, magnesium, nickel, potassium, selenium, silver, and sodium). The calibration curve correlation coefficients were greater than 0.995, meeting instrument calibration criteria. The continuing calibration check standards had percent recoveries (%Rs) within 20% of the true value, as required. High-concentration samples were diluted and re-analyzed so that their concentrations were within the instrument's calibration range.

III. ICP Interference Check Sample: Acceptable

Percent recoveries were within 20% of the true values, as required, to demonstrate that interferences were not present.

IV. Blanks: Acceptable

Method blanks were prepared and analyzed with the samples, as required. Percent recoveries (%Rs) for the spiked method blanks were within method quality control limits.

V. Analytical Error: Precision and bias not determined

A spot check of sample matrix %Rs indicated that the %Rs were within method control units.

VI. Performance Evaluation Samples: Not applicable

VII. Overall Assessment of Data:

This data evaluation is based upon guidelines established in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) and SW-846 "Test Methods for the Evaluation of Solid Waste" (1986, 3rd ed.). With the data submitted, the results are acceptable for use as reported.

NATIONAL ENVIRONMENTAL TESTING, INC.

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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278375

NET Job No.: 94.07567

Sample Description: S-1; Grab
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:20
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|---|
| Solids, Total | 85.8 | | % | 10/05/1994 | 0.1 | mpl | 109 | 2540 (4) |
| METALS - ICP 2 Non-Aq | Complete | | | 10/03/1994 | | jmt | 135 | 6010(1) 200.7(3) |
| Aluminum,ICP | 8,250 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 677 | 6010 (1) |
| Antimony, ICP | <29 | | mg/Kg | 10/03/1994 | 25 | jmt | 297 641 | 6010 (4) |
| Arsenic, AA | 19 | S | mg/Kg | 10/04/1994 | 0.25 | mjs | 326 | 7060 (1) |
| Barium, ICP | 70 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 748 | 6010 (1) |
| Beryllium, ICP | 3.5 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 726 | 6010 (1) |
| Cadmium, ICP | 3.0 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 719 | 6010 (1) |
| Calcium, AA | 38,500 | | mg/Kg | 10/04/1994 | 50 | jmt | 297 119 | 7140 (1) |
| Chromium, ICP | 28 | | mg/Kg | 10/03/1994 | 2.0 | jmt | 297 710 | 6010 (1) |
| Cobalt, ICP | 8.5 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 788 | 6010 (1) |
| Copper, ICP | 2,500 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 932 | 6010 (1) |
| Iron, ICP | 22,800 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 755 | 6010 (1) |
| Lead, ICP | 1,000 | | mg/Kg | 10/03/1994 | 4.0 | jmt | 297 878 | 6010 (1) |
| Magnesium, AA | 30,300 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 112 | 7450 (1) |
| Manganese, ICP | 710 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 658 | 6010 (1) |
| Mercury, CVAA | 1.7 | | mg/Kg | 10/04/1994 | 0.02 | jmt | 238 348 | 7471 (1) |
| Nickel, AA | 61 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 10 | 7520 (1) |
| Potassium, AA | 1,250 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 116 | 7610 (1) |
| Selenium, AA | <13 | S | mg/Kg | 10/04/1994 | 11 | mjs | 607 | 7741 (1) |
| Silver, AA | 3.8 | | mg/Kg | 09/30/1994 | 2.0 | jmt | 228 | 7760 (1) |
| Sodium, AA | 380 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 124 | 7770 (1) |
| Thallium, ICP | <12 | | mg/Kg | 10/03/1994 | 10 | jmt | 297 648 | 6010 (1) |
| Vanadium, ICP | 17 | | mg/Kg | 10/03/1994 | 2.5 | jmt | 297 525 | 6010 (1) |
| Zinc, ICP | 8,400 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 715 | 6010 (1) |
| Prep PCBs 8080 NonAqueous | extracted | | | 09/30/1994 | | jpd | 198 | 3540A (1) |

S : Parameter analysis was sub-contracted to another NET location.



OCEAN GROUP

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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278376

NET Job No.: 94.07567

Sample Description: S-2; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:35
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|---|
| Solids, Total | 74.7 | | % | 09/29/1994 | 0.1 | mpl | 108 | 2540 (4) |
| METALS - ICP 2 Non-Aq | Complete | | | 10/03/1994 | | jmt | 135 | 6010(1) 200.7(3) |
| Aluminum,ICP | 7,890 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 677 | 6010 (1) |
| Antimony, ICP | <33 | | mg/Kg | 10/03/1994 | 25 | jmt | 297 641 | 6010 (4) |
| Arsenic, AA | 25 | S | mg/Kg | 10/04/1994 | 10 | mjs | 326 | 7060 (1) |
| Barium, ICP | 141 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 748 | 6010 (1) |
| Beryllium, ICP | 2.22 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 726 | 6010 (1) |
| Cadmium, ICP | 2.76 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 719 | 6010 (1) |
| Calcium, AA | 28,100 | | mg/Kg | 10/04/1994 | 50 | jmt | 297 119 | 7140 (1) |
| Chromium, ICP | 22 | | mg/Kg | 10/03/1994 | 2.0 | jmt | 297 710 | 6010 (1) |
| Cobalt, ICP | 18.6 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 788 | 6010 (1) |
| Copper, ICP | 1,300 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 932 | 6010 (1) |
| Iron, ICP | 25,400 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 755 | 6010 (1) |
| Lead, ICP | 659 | | mg/Kg | 10/03/1994 | 4.0 | jmt | 297 878 | 6010 (1) |
| Magnesium, AA | 16,900 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 112 | 7450 (1) |
| Manganese, ICP | 348 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 658 | 6010 (1) |
| Mercury, CVAA | 0.16 | | mg/Kg | 09/29/1994 | 0.02 | mic | 347 | 7471 (1) |
| Nickel, AA | 50 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 10 | 7520 (1) |
| Potassium, AA | 870 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 116 | 7610 (1) |
| Selenium, AA | <15 | S | mg/Kg | 10/04/1994 | 10 | mjs | 607 | 7741 (1) |
| Silver, AA | 3.1 | | mg/Kg | 09/30/1994 | 2.0 | jmt | 228 | 7760 (1) |
| Sodium, AA | 420 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 124 | 7770 (1) |
| Thallium, ICP | 13 | | mg/Kg | 10/03/1994 | 10 | jmt | 297 648 | 6010 (1) |
| Vanadium, ICP | 20.4 | | mg/Kg | 10/03/1994 | 2.5 | jmt | 297 525 | 6010 (1) |
| Zinc, ICP | 4,270 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 715 | 6010 (1) |
| Prep PCBs 8080 NonAqueous | extracted | | | 09/30/1994 | | jpd | 198 | 3540A (1) |

S : Parameter analysis was sub-contracted to another NET location.



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278378

NET Job No.: 94.07567

Sample Description: S-4; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 09:55
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|---|
| Solids, Total | 82.8 | | % | 09/29/1994 | 0.1 | mpl | 108 | 2540 (4) |
| METALS - ICP 2 Non-Aq | Complete | | | 10/03/1994 | | jmt | 135 | 6010(1) 200.7(3) |
| Aluminum,ICP | 12,900 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 677 | 6010 (1) |
| Antimony, ICP | 48.6 | | mg/Kg | 10/03/1994 | 25 | jmt | 297 641 | 6010 (4) |
| Arsenic, AA | 29 | S | mg/Kg | 10/04/1994 | 10 | mjs | 326 | 7060 (1) |
| Barium, ICP | 395 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 748 | 6010 (1) |
| Beryllium, ICP | 0.78 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 726 | 6010 (1) |
| Cadmium, ICP | 18.6 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 719 | 6010 (1) |
| Calcium, AA | 21,800 | | mg/Kg | 10/04/1994 | 50 | jmt | 297 119 | 7140 (1) |
| Chromium, ICP | 33.7 | | mg/Kg | 10/03/1994 | 2.0 | jmt | 297 710 | 6010 (1) |
| Cobalt, ICP | 10.0 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 788 | 6010 (1) |
| Copper, ICP | 10,900 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 932 | 6010 (1) |
| Iron, ICP | 45,700 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 755 | 6010 (1) |
| Lead, ICP | 6,020 | | mg/Kg | 10/03/1994 | 4.0 | jmt | 297 878 | 6010 (1) |
| Magnesium, AA | 14,600 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 112 | 7450 (1) |
| Manganese, ICP | 814 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 658 | 6010 (1) |
| Mercury, CVAA | 3.33 | | mg/Kg | 10/03/1994 | 0.02 | jmt | 347 | 7471 (1) |
| Nickel, AA | 78.0 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 10 | 7520 (1) |
| Potassium, AA | 1,440 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 116 | 7610 (1) |
| Selenium, AA | <13 | S | mg/Kg | 10/04/1994 | 10 | mjs | 607 | 7741 (1) |
| Silver, AA | 7.4 | | mg/Kg | 09/30/1994 | 2.0 | jmt | 228 | 7760 (1) |
| Sodium, AA | 670 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 124 | 7770 (1) |
| Thallium, ICP | 25 | M+ | mg/Kg | 10/03/1994 | 10 | jmt | 297 648 | 6010 (1) |
| Vanadium, ICP | 26.1 | | mg/Kg | 10/03/1994 | 2.5 | jmt | 297 525 | 6010 (1) |
| Zinc, ICP | 22,100 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 715 | 6010 (1) |
| Prep PCBs 8080 NonAqueous | extracted | | | 09/30/1994 | | jpd | 198 | 3540A (1) |

M+ : Analyte quantified by MSA due to low spike recovery.
S : Parameter analysis was sub-contracted to another NET location.



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278379

NET Job No.: 94.07567

Sample Description: S-5; Grab
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 10:00
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|---|
| Solids, Total | 69.2 | | % | 09/29/1994 | 0.1 | mpl | 108 | 2540 (4) |
| METALS - ICP 2 Non-Aq | Complete | | | 10/03/1994 | | jmt | 135 | 6010(1) 200.7(3) |
| Aluminum,ICP | 171,000 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 677 | 6010 (1) |
| Antimony, ICP | 37 | | mg/Kg | 10/03/1994 | 25 | jmt | 297 641 | 6010 (4) |
| Arsenic, AA | 32 | S | mg/Kg | 10/04/1994 | 10 | mjs | 326 | 7060 (1) |
| Barium, ICP | 337 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 748 | 6010 (1) |
| Beryllium, ICP | 21.5 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 726 | 6010 (1) |
| Cadmium, ICP | 29.9 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 719 | 6010 (1) |
| Calcium, AA | 14,200 | | mg/Kg | 10/04/1994 | 50 | jmt | 297 119 | 7140 (1) |
| Chromium, ICP | 176 | | mg/Kg | 10/03/1994 | 2.0 | jmt | 297 710 | 6010 (1) |
| Cobalt, ICP | 18.7 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 788 | 6010 (1) |
| Copper, ICP | 24,700 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 932 | 6010 (1) |
| Iron, ICP | 33,900 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 755 | 6010 (1) |
| Lead, ICP | 6,210 | | mg/Kg | 10/03/1994 | 4.0 | jmt | 297 878 | 6010 (1) |
| Magnesium, AA | 5,770 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 112 | 7450 (1) |
| Manganese, ICP | 1,770 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 658 | 6010 (1) |
| Mercury, CVAA | 0.51 | | mg/Kg | 09/29/1994 | 0.02 | mic | 347 | 7471 (1) |
| Nickel, AA | 392 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 10 | 7520 (1) |
| Potassium, AA | 253 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 116 | 7610 (1) |
| Selenium, AA | <13 | S | mg/Kg | 10/04/1994 | 10 | mjs | 607 | 7741 (1) |
| Silver, AA | 21.7 | | mg/Kg | 09/30/1994 | 2.0 | jmt | 228 | 7760 (1) |
| Sodium, AA | 1,200 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 124 | 7770 (1) |
| Thallium, ICP | 66 | | mg/Kg | 10/03/1994 | 10 | jmt | 297 648 | 6010 (1) |
| Vanadium, ICP | 19.6 | | mg/Kg | 10/03/1994 | 2.5 | jmt | 297 525 | 6010 (1) |
| Zinc, ICP | 54,900 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 715 | 6010 (1) |

S : Parameter analysis was sub-contracted to another NET location.



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# ANALYTICAL REPORT

Ms. Mary Jane Ripp
ECOLOGY & ENVIRONMENT, INC
77 West Jackson Blvd.
Chicago, IL 60604

10/06/1994

Sample No. : 278380

NET Job No.: 94.07567

Sample Description: S-6; Composite
T05-9409-807; ZT2051

Date Taken: 09/26/1994
Time Taken: 10:40
IEPA Cert. No. 100221

Date Received: 09/27/1994
Time Received: 10:15
WDNR Cert. No. 999447130

| Parameter | Results | | Units | Date of Analysis | Method PQL | Analyst | Batch No. Prep/Run | Analytical Method |
|---|---|---|---|---|---|---|---|---|
| Solids, Total | 81.1 | | % | 09/29/1994 | 0.1 | mpl | 108 | 2540 (4) |
| METALS - ICP 2 Non-Aq | Complete | | | 10/03/1994 | | jmt | 135 | 6010(1) 200.7(3) |
| Aluminum,ICP | 9,330 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 677 | 6010 (1) |
| Antimony, ICP | <31 | | mg/Kg | 10/03/1994 | 25 | jmt | 297 641 | 6010 (4) |
| Arsenic, AA | 180 | S | mg/Kg | 10/04/1994 | 10 | mjs | 326 | 7060 (1) |
| Barium, ICP | 55.2 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 748 | 6010 (1) |
| Beryllium, ICP | 0.63 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 726 | 6010 (1) |
| Cadmium, ICP | 3.79 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 719 | 6010 (1) |
| Calcium, AA | 4,900 | | mg/Kg | 10/04/1994 | 50 | jmt | 297 119 | 7140 (1) |
| Chromium, ICP | 16.3 | | mg/Kg | 10/03/1994 | 2.0 | jmt | 297 710 | 6010 (1) |
| Cobalt, ICP | 6.4 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 788 | 6010 (1) |
| Copper, ICP | 866 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 932 | 6010 (1) |
| Iron, ICP | 59,900 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 755 | 6010 (1) |
| Lead, ICP | 495 | | mg/Kg | 10/03/1994 | 4.0 | jmt | 297 878 | 6010 (1) |
| Magnesium, AA | 3,240 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 112 | 7450 (1) |
| Manganese, ICP | 774 | | mg/Kg | 10/03/1994 | 0.50 | jmt | 297 658 | 6010 (1) |
| Mercury, CVAA | 0.20 | | mg/Kg | 09/29/1994 | 0.02 | jmt | 347 | 7471 (1) |
| Nickel, AA | 45.1 | | mg/Kg | 10/03/1994 | 5.0 | jmt | 297 10 | 7520 (1) |
| Potassium, AA | 700 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 116 | 7610 (1) |
| Selenium, AA | <15 | S | mg/Kg | 10/04/1994 | 10 | mjs | 607 | 7741 (1) |
| Silver, AA | <2.5 | | mg/Kg | 09/30/1994 | 2.0 | jmt | 228 | 7760 (1) |
| Sodium, AA | 99 | | mg/Kg | 09/30/1994 | 50 | jmt | 297 124 | 7770 (1) |
| Thallium, ICP | 20 | | mg/Kg | 10/03/1994 | 10 | jmt | 297 648 | 6010 (1) |
| Vanadium, ICP | 17.4 | | mg/Kg | 10/03/1994 | 2.5 | jmt | 297 525 | 6010 (1) |
| Zinc, ICP | 2,630 | | mg/Kg | 10/03/1994 | 1.0 | jmt | 297 715 | 6010 (1) |
| Prep PCBs 8080 NonAqueous | extracted | | | 09/30/1994 | | jpd | 198 | 3540A (1) |

S : Parameter analysis was sub-contracted to another NET location.



OCEAN GROUP

NET Midwest, Bartlett Division

KEY TO ABBREVIATIONS and METHOD REFERENCES

| | | |
|---|---|---|
| < | : | Less than; When appearing in the results column indicates the analyte was not detected at or above the reported value. |
| mg/L | : | Concentration in units of milligrams of analyte per liter of sample. Measurement used for aqueous samples. Can also be expressed as parts per million (ppm). |
| ug/g | : | Concentration in units of micrograms of analyte per gram of sample. Measurement used for non-aqueous samples. Can also be expressed as parts per million (ppm) or mg/Kg. |
| ug/L | : | Concentration in units of micrograms of analyte per liter of sample. Measurement used for aqueous samples. Can also be expressed as parts per billion (ppb). |
| ug/Kg | : | Concentration in units of micrograms of analyte per kilogram of sample. Measurement used for non-aqueous samples. Can also be expressed as parts per billion (ppb). |
| B | : | Sample result flag indicating that the analyte was also found in the method blank analysis. The value after the B indicates the concentration found in the blank analysis. |
| D | : | Sample result flag indicating that the reported concentration is from an analysis performed at a dilution. The value following the D indicates the dilution factor of the analysis. |
| J | : | Sample result flag indicating that the reported concentration is below the routine reporting limit but greater than the Method Detection Limit. The value should be considered estimated. |
| TCLP | : | These initials appearing in front of an analyte name indicate that the Toxicity Characteristic Leaching Procedure (TCLP) was performed for this test. |
| % | : | Percent; To convert ppm to %, divide the result by 10,000.<br>To convert % to ppm, multiply the result by 10,000. |
| Dry Weight (dw) | : | When indicated, the results are reported on a dry weight basis. The contribution of the moisture content in the sample is subtracted when calculating the concentration of the analyte. |
| ICP | : | Indicates analysis was performed using Inductively Coupled Plasma Spectroscopy. |
| AA | : | Indicates analysis was performed using Atomic Absorption Spectroscopy. |
| GFAA | : | Indicates analysis was performed using Graphite Furnace Atomic Absorption Spectroscopy. |
| PQL | : | Practical Quantitation Limit; the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. |

Method References

(1) Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", USEPA SW-846, 3rd Edition, 1986.

(2) ASTM "American Society for Testing Materials

(3) Methods 100 through 499: see "Methods for Chemical Analysis of Water and Wastes", USEPA, 600/4-79-020, Rev. 1983.

(4) See "Standard Methods for the Examination of Water and Wastewater", 17th Ed, APHA, 1989.

(5) Methods 600 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants", USEPA Federal Register Vol. 49 No. 209, October 1984.

(6) Methods 500 through 599: see "Methods for the Determination of Organic Compounds in Drinking Water," USEPA 600/4-88/039, Rev. 1988.